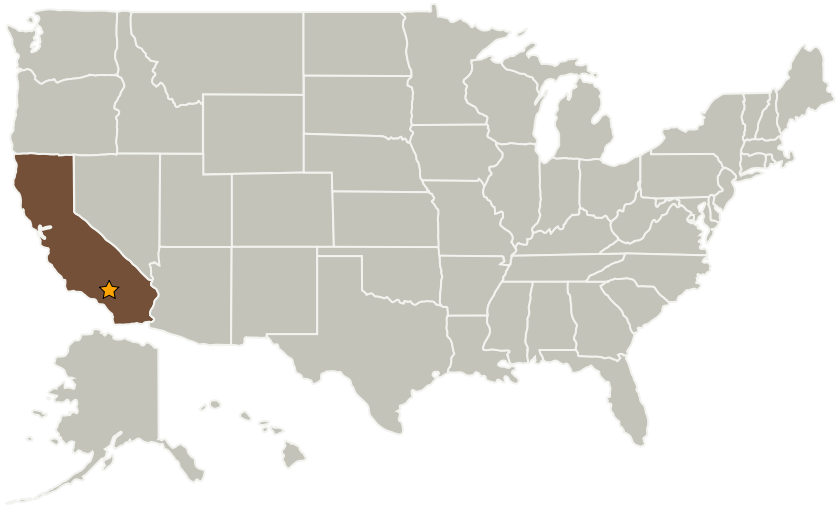
Numerical Algorithms for Steady and Unsteady Multi-Disciplinary Simulation of Flight Vehicles, Phase II

Completed Technology Project (2005 - 2016)

Project Introduction

Industry is driven by the cost of man-power and time to market, and is still awaiting a versatile and reliable multi-disciplinary analysis code. The proposed JFLO software suite addresses many aspects that are still not totally resolved in current state-of- the-art CFD. It will enable optimal designs as well as the multi-disciplinary application of CFD for digital flight. The key elements of JFLO are : ease of use; broad analysis capability for 3D steady and unsteady applications for the entire range of speeds for low Mach to supersonic, high-resolution mesh-blind solution algorithms and CAD-blind surface reconstruction, mesh-and user-independent results via CAD-respecting mesh adaptation, fast solutions via advanced convergence acceleration techniques, and above all reliability and high accuracy. It weaves together technologies that have been recognized in their individual right: optimal control design, coupled CFD and CSD and automatic mesh optimization. Here they are brought together in a single package for the first time.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California
Intelligent Aerodynamics	Supporting Organization	Industry	Menlo Park, California

Primary U.S. Work Locations
California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.3 Aeroelasticity